

WE CLAIM:

1. A system for applying a modifying composition to a non-equidimensional substrate, comprising: a processing chamber configured for passing the non-equidimensional substrate therethrough, said processing chamber being further configured to accept a treatment mixture into the chamber during movement of the non-equidimensional substrate through the processing chamber, said treatment mixture comprising the modifying agent in a carrier medium, said carrier medium being selected from the group consisting of a supercritical fluid, a near-critical fluid, a superheated fluid, a superheated liquid, and a liquefied gas, said modifying agent being applied to the non-equidimensional substrate upon contact between the treatment mixture and the non-equidimensional substrate.

2. A system as in claim 1 wherein the processing chamber further comprises a first region, a second region, and a constricted medial region between the first region and the second region, and wherein the modifying agent is separated from the carrier medium upon a pressure drop when the treatment mixture is introduced into the constricted medial region, such that the modifying agent is applied to the substrate.

3. A system as in claim 2 further comprising an entry seal that essentially matches and is slightly larger than the non-equidimensional substrate.

4. A system as in claim 3 further comprising an exit seal that essentially matches and is slightly larger than the non-equidimensional substrate.

5. A system as in claim 1 wherein the non-equidimensional substrate is selected from the group consisting of sheet-like substrates, U-shaped substrates, corrugated substrates, and angled substrates.

6. A system as in claim 5 wherein the sheet-like substrate is selected from the group consisting of a plate, a ribbon, a sheet, a screen, and a plied material.

7. A system as in claim 4 wherein the non-equidimensional substrate is removed from the exit seal at the same rate that the non-equidimensional substrate is continuously fed into the chamber through the entry seal.

8. A system as in claim 1 further comprising at least one expansion chamber disposed between the entry seal and the processing chamber, and at least one expansion chamber between the exit seal and the processing chamber.

9. A system as in claim 8 wherein the entry seal and the exit seal are fluid filled chambers which maintain a pressure that is at least slightly greater than the adjacent expansion chambers.

10. A system as in claim 9 wherein the pressure is maintained by continuous inflow of a gas.

11. A system as in claim 10 wherein the gas is inert with respect to the treatment mixture.
12. A system as in claim 1 wherein pressure is controlled in the processing chamber by a pressure regulator.
13. A system as in claim 1 wherein the temperature is controlled in the processing chamber by a temperature regulator.
14. A system as in claim 1 further comprising a substrate feed controller configured for controlling the speed at which the substrate is passed through the system.
15. A system as in claim 4 wherein the entry end seal and the exit seal are adjustable to various sizes for accepting various substrates for modification.